THE VETERINARY RECORD

A Weekly Journal for the Profession.

No. 496. JANUARY 8, 1898. Vol. X.

Sir George Brown, C.B.

Her Majesty the Queen has been pleased to confer the honour of Knighthood upon Professor George Brown. This announcement will give rise to a feeling of the liveliest satisfaction in the veterinary profession, for it is the highest recognition yet bestowed upon one of our members for professional work. The official list refers to the recipient as the Consulting Veterinary adviser to the Board of Agriculture, and therefore we cannot be wrong in believing that the knighthood is a reward for the thirty years work done by Professor Brown at the Veterinary Department. The honour is well deserved, and it may be taken as a further proof of the good-will and sympathy possessed by the Rt. Hon. Walter Long towards the objects and progress of our profession.

Sir George Brown is now one of the oldest members of the Royal College of Veterinary Surgeons, having obtained his diploma in 1847. He has had a varied experience and held many important offices. For some years he was Professor of Veterinary science at the Royal Agricultural College. He was also a teacher at and Principal of the Royal Veterinary College. He held a post on the editorial staff of *The Field*, and for many years has been the veterinary adviser of the Royal Agricultural Society and of the Bath and West of England Agricultural Society. In every capacity he has won and held the confidence and esteem of those with whom he has been brought into contact. Not only has he always been well abreast of the scientific advance of his profession but he is endowed with a supreme caution which prevents him advising anything rash or heroic.

During Professor Brown's directorship of the Veterinary Department of the Privy Council, and later of the Board of Agriculture, he was not only professional adviser but executive chief. The responsibility of such a position cannot be over estimated. The freedom from disease of our home flocks and herds depended very greatly upon the measures he advised and the way in which they were carried out. This was not all. The measures taken to keep out disease from our shores entailed very great interference with trade, and the action of the Veterinary Department affected ships, harbours, docks and railways. Great interests were involved, and the slightest mistake would have been followed by great calamities. To keep out disease and to suppress it at home was the greatest interest, but this was to be done with as little injury to commerce as possible.

Professor Brown's success was marked, and his work did more to convince the country of the importance of veterinary science than did any other event of our professional existence.

Grateful as we are for the honour done to Sir George Brown, we cannot help saying that we should have been even more pleased if the veteran Professor Simonds had also been the recipient of some mark of recognition.

THE MODE OF INFECTION IN GLANDERS.

By W. Hunting, F.R.C.V.S.

In the December number of *The Journal of Comparative Pathology and Therapeutics* is a long and interesting but very controversial article on this subject. The writer believes "that inhalation is the common method of infection," but that "horses may contract the disease by ingestion." Frequent reference is made to the opinions of Professor Nocard and Mr. Hunting, and it is stated that "Mr. Hunting and Professor Nocard are in agreement on this point, both favouring the ingestion theory." I am flattered by the compliment of having my name coupled with that of so distinguished an authority, and the theory of ingestion is enormously strengthened by the support of M. Nocard.

It would not be unwise, perhaps, to let the question rest here, simply asking for some experimental evidence or one solitary clinical fact giving the slightest support to the inhalation theory. I am not sanguine enough to expect that any arguments I may bring to the support of my contention are likely to convince those who maintain that inhalation is the common method of infection, but I do hope that a restatement of clinical facts may assist those still in doubt. I venture on this repetition because I may hitherto have failed to present my facts and inferences with the lucidity necessary for their appreciation. Professor McFadyean refers to a recent attempt of mine to elucidate the question thus: "For the most part his case rests on dogmatic assertions based upon clinical observation, and for the remainder on a number of assumptions that are opposed to probability or actually negatived by experience." This criticism seems to require from me a careful restatement of my position so that at least it may be free from improbable assumptions and not opposed to experience. There is just one point I shall venture to ignore, *i.e.*, the somewhat contemptuous reference to assertions "based on clinical observation." I know no better basis for the elucidation of disease problems than clinical observation when sufficiently extensive, and when carefully made. I consider it much safer

than mere analogies drawn from the behaviour of bacteria in other diseases.

The evidence which seems to me to prove that ingestion is in ordinary conditions the chief method of infection in glanders is varied and extensive. First and most important is the fact that many men in this country have experimentally shown that glanders can be produced by causing horses to swallow water or food containing glanders virus. Sainbel, Coleman, Simonds, White, and others produced glanders, with lung lesions, by ingestion. Nocard has repeated their experiments, using pure cultures instead of virulent discharges, and with only one difference in results, viz., that his subjects showed a much shorter period of incubation.

Those who have had the opportunity of witnessing many outbreaks of glanders in large studs will bear me out in the observation that where the facilities are greatest for the ingestion of glanders bacilli, there the disease spreads most rapidly. When nose-bags are indiscriminately used for any horses, when infected animals are moved from stall to stall and thus allowed to contaminate food in mangers, the disease spreads widely and rapidly. An open water trough, common to all the horses in a stud, renders the spread of disease rampant, whereas the closing of such trough is always followed by a decline in the number of cases.

Never have I seen alterations of ventilation followed by any difference in the spread of glanders. Coleman's account of the Quiberon expedition has been quoted as supporting the ærial spread. The transport ships with army horses on board met with rough weather, and the hatches were closed for a prolonged period. When the horses were landed a large proportion were found affected with glanders. Now the duration of the voyage was too short to have developed the disease from fresh infection, and the explanation simply is that the animals were diseased when shipped, and clinical symptoms were developed by the semi-suffocation and hardships inflicted.

The spread of glanders in a stable is always insidious, and if inhalation were a possible method of infection, it would probably occur in a closed building. In a grass field we have conditions inimical to inhalation, and if that were the most common method of infection we should expect very little spread of disease there. Not very long since I examined thirty horses running together in a large pasture. It was a dry season, and the water supply was from one pool. The horses had been together just over three weeks, and nine were visibly glandered. Two of the affected animals I had known for some months, and the stud from which they came had never had a case of glanders in it. What was the method of infection. Was it the water or the air?

Clinical observation—my own and others—recognises that glanders spreads more rapidly in a bale stable than in a stall stable. Now stalls prevent the direct passage of air from a diseased to a healthy horse standing next to it, but they do not protect the whole volume of air in the stable from any contamination capable of floating.

The absence of stalls permits a diseased horse to directly sneeze and eject infected mucus into the mangers and troughs of horses either side of him. Every horseowner and practitioner of experience knows that glanders in a stable spreads most frequently from the diseased animal to his neighbour, or when they work in pairs to the working mate.

I remember a case where a young horse was accidentally placed for a few hours in a loose box from which a glandered horse with a profuse nasal discharge had just been removed. In less than three months he was visibly diseased and killed. Which is the most probable—infection through the air he breathed or the contaminated food he ate?

A fact in reference to the infection of human beings has always seemed to me to afford some evidence against infection by inhalation. Glanders is uncommon in man, but cases occasionally present themselves. They are nearly always acute and fatal. As a rule there is history of a wound, and the lungs show nodules. In some of the large cab and omnibus stables of London a few years ago glanders simply raged. I have known an annual loss of 50 horses from a stud which never exceeded a total of 120. In this stable horsekeepers spent 12 hours a day. They breathed the same air as the horses, and remained at the work for years, but not one fell a victim to glanders. Although it may be that man is not so susceptible as the horse there is a strong basis for the inference that if inhalation were a common method of infection, the horse-keepers would not escape as they do. They breathe the same air, they do not consume the contaminated food and water.

This evidence does not prove that glanders cannot spread by inhalation. It does prove that it is spread by ingestion, and I submit that whilst it affords strong presumption that ingestion is the common method it supplies some evidence that it is the only one.

In comparing the probabilities of inhalation and ingestion as methods of infection in glanders, there are one or two more facts which seem opposed to inhalation. The infective discharges from glandered horses are usually viscid or even glutinous. They adhere firmly to the object against which they are ejected and dry slowly. The fresh moist bacillus is not carried by the air. It must be dried to an impalpable powder, or be adherent to particles of dust. The bacillus is easily killed by sunlight, by complete dessication, and by the organisms of putrefaction. It is difficult to imagine that many escape all these destructive agencies, but should an occasional bacillus survive, and attain free flotation in the air of a stable, it has other difficulties to surmount before it reaches the lung of a susceptible animal. The mucus covered membranes of the nose, pharynx, and trachea offer almost the resistance of a filter against the passage of solid particles, and the chances of a stray organism in a volume of air reaching the lungs is small indeed. Professor McFadyean acknowledges the feeble resistance of the glanders bacillus to destructive agencies, but claims that this fact is "as little in favour of one theory as the other." Why so? The Professor states his reason, and I cannot refrain from saying that it is one hardly

to have been expected in a scientific article. This is it—"for one would expect that in the case of an organism so easily killed the gastric juice would be a serious obstacle to infection by way of the intestine." In the face of repeated demonstrations that the gastric juice does not kill the bacillus—that infection through the stomach does occur—it is not argument to say "one would expect" the reverse. Such expectation is opposed to perfectly well established facts.

I have left till last the argument upon which Professor McFadyean mainly relies as a basis for his theory of inhalation. It is a clever combination of analogy and expectation—to my mind, of an analogy which has no application and of an expectation which is opposed to all experience. To quote his case in full would cover too much space so I have tried to fairly condense it thus: The lungs are incomparably the most frequent seat of glanders, in a considerable proportion of cases they are the exclusive seat of the disease. Now the primary seats of the lesions in bacterial diseases appear to depend upon one of two factors, viz., (1) the anatomical relationship of the part in which the lesions develope to the place at which the bacteria gain access to the body, and (2) certain characters of the part which render it a specially favourable soil for the development of the bacteria. One or two illustrations will make this clear. Anthrax in the pig has swelling of the pharyngeal glands and surrounding connective tissue for its primary lesion and this, it is generally agreed, points to infection by bacilli which have penetrated into the tissues of the mouth or throat and have been carried in the lymph stream to the pharyngeal lymphatic glands. In other words the glands are here attacked because of their anatomical relationship to the part at which the anthrax bacilli entered the body." Actinomycosis is also adduced as an example of disease in which the part attacked is that where the organism invaded the body.

There is no similarity between glanders and these two diseases. In glanders the lungs are always affected, in neither anthrax nor actinomycosis is there a special organ which presents constant specific lesions leaving the rest of the body unaffected. A better illustration would have been foot-and-mouth disease, or small pox. In small pox, no matter what part of the body is first invaded the specific lesion appears upon the skin, but no one would found upon that fact a theory that the skin was the structure through which the organism entered the body. So with foot-and-mouth disease the frequent affection of the feet is no evidence that the primary infections took place at that part. In glanders it is rare indeed to find external lesions which can be called primary. In nearly every case the visible lesions are secondary to an infection which took place long before their appearance.

The professor's argument then proceeds—"Whenever glanders bacilli are introduced through the skin their passage is marked by primary lesions. If the bacilli enter the system from the stomach or intestine they must reach the lungs through the blood or lymph streams. In either case they must pass through the liver or through the mesenteric glands. One would naturally expect in such a case to find glanders lesions developed somewhere on the track of the bacilli. We seldom or never find such lesions, and this is the greatest obstacle to the acceptance of the theory of infection by ingestion."

This is a curiously inept conclusion. It meets an every-day fact—that glandered lungs do result from ingestion of glanders matter—by denying the probability of such a thing because of an *expectation* that some other lesions ought to be found on the track between the point of entrance and the final habitat of the bacillus. What we have to consider is not what one might expect but what one sees in existence. The absence of lesions in the liver and mesenteric glands should be accounted for—not denied—if it be desired to use this absence as an argument for or against the course taken by bacilli. It may be that lesions of a temporary nature are produced but soon disappear. It may be that the bacillus has no power to locate itself in this region and so cause structural changes. The exact powers of the bacillus are not known. It never causes lesions in the muscles of a horse, it never fails to cause lesions in the muscles of man. Glanders lesions of the skin and subcutaneous tissues are never permanent if the horse recovers from the general disturbance.

Farcy "cords" and "buds" undergo a series of changes and soon disappear leaving little or no trace of their existence. Why should not lesions in the liver and mesentery, if they occur, also disappear? But the question is not to be settled by guessing or by expecting. We have some distinct facts to guide us and a comparison of the probabilities may be tabulated in this way:

For Ingestion.	For Inhalation
1 That by this means glanders can be produced experimentally.	1 That the lungs are the chief seat of disease and are in direct contact with the air.
2 That the greater the facilities for ingestion the greater the spread of disease	2 That lesions of the intestines, mesentery, and liver are seldom or never found.
3 That ventilation has no effect upon the spread.	3 That if bacilli passed through these organs on their way to the lungs some lesions might be expected in their track.
4 That the conditions of a stable and the nature of virulent discharges are inimical to aerial spread.	
5 That men in stables are not affected by inhalation.	
6 That the passage of organisms through the respiratory passages is not easy.	
7 That the passage of organisms into the digestive organs is easy.	
8 That it is beyond doubt that glanders bacilli are not killed by the gastric juice.	
9 That the bacillus outside the body has a feeble vitality	

For the reasons stated I maintain that the balance of probabilities is overwhelmingly in favour of the theory that the most common, if not the constant, natural method of infection in glanders is by ingestion. I am supported in this view by the authority of M. Nocard, and much strengthened in my convictions by the failure of the learned and brilliant editor of our quarterly journal to even shake the basis upon which they are founded.

HANDLING MONKEYS, Etc.

By H. Leeney, M.R.C.V.S.,

As my recent communication on spaying a monkey was thought worthy of space in *The Veterinary Record* it may possibly interest some of your readers, not familiar with the "meddling monkey and busy ape" to hear what means are employed to secure them.

The only book I know of on monkeys, is an opuscule published by Mr. L. U. Gill, of 170 Strand, but it gives very little information on methods of restraint. It may therefore be assumed that there are others like myself who have had to discover ways and means but have not, so far as I am aware, published their experience.

Approaching the subject as a novice I imagined that one could throw a blanket or rug over a monkey as one can over a cat. It is, however, very difficult to do so, since the quadrumana are as suspicious as they are cunning. A monkey will nearly always give you his hand, and if he will not, you may be able to scratch him until a favourable opportunity occurs of getting his arms behind him. Curiously enough, a monkey seldom suspects this trick, although he is as helpless as a public house loafer when seized in a similar manner by the official "chucker out." He cannot bite you and his other limbs are only employed in trying to get a foot-hold, or *hand*-hold, if you will. The long tailed varieties are greatly cowed by firmly grasping the tail, For purposes of examination no further precautions are necessary.

If a minor operation has to be performed such as the extraction of a tooth, a very long bandage may be wound round the throat to keep the subject from tucking in his chin. Another person may hold him by the ears, and his impotent rage, displayed by keeping his mouth open, affords the surgeon an opportunity to apply the forceps. In releasing the animal precautions should be taken. It should either be placed in its cage or chained up by the usual belt, before releasing it from control, as many monkeys apparently quite conquered will take instant reveuge when liberated. Very few of these creatures have any real affection for those who are kind to them and nearly all are revengeful when offended.

In the comparatively small experience from which I speak, monkeys have proved first rate subjects for general anæsthesia. On the last occasion when I assieted Mr. G. Parr, of Salisbury (Dec. 30th), to castrate a five-year-old (Sykes) we had a particularly savage brute to deal with, one that was so suspicious that my colleague wisely forwarded instructions to have the animal put into a box before our arrival. There were bars through which we could thrust chloroformed sponges and the ever present curiosity of the tribe induced our patient to pull them in and examine them. We covered the box with a rug, lifting a corner from time to time until we saw him subside upon his face, then lifting him out by the "scruff" of his neck, one man held his arms behind him, while we quickly relieved him of a pair of testicles as large as those of the human subject. Arnold's reliance castrator was the instrument employed; there was but slight hæmorrhage, and that from the scrotal wound. It was thought advisable, however, to use a little styptic and the wounds were lightly touched with tinct. ferri. Before he was sober enough to sit upright he took up an attitude of defiance, followed by a very careful scrutiny of his dismembered scrotum, tasting the tinct. ferri. cum sanguinis. He did not appear to suffer more pain than the tom-cat which your readers must have often observed arching his back with evident pleasure at being released rather than showing any symptoms of suffering.

RUPTURE OF BOTH SUSPENSORY LIGAMENTS.

By Hugh C. Jagger, M.R.C.V.S., Bicester.

Whilst hunting with the Bicester and Warden Hill Hounds on November 30th, 1897, I was called to look at the mare the second whip was riding. She had given way at both fore fetlock joints and was standing with her feet in front of her, the soles pointing straight to the front, resting, as it were, on the distal end of each large metacarpal bone, one of which had pierced the skin and rested naked on the turf. She never fell or gave the rider a fall, he simply dismounting quietly, but stood in the position described until she was shot, which was as soon as we could procure a gun from a neighbouring farm.

I went next day to the kennels but unfortunately the flesher had skinned and cut up the carcase, having received no instructions not to do so. There were no bones broken, they still have them preserved. I was told that the flexor tendons were not ruptured but merely both suspensory ligaments about their middle. At the time of the accident the mare was trotting gently along under a hedge and the rider had only noticed her stumble once before, immediately prior to the accident.

I should be glad if some of the readers of *The Veterinary Record* would give their opinions as to the cause of the occurrence. I regret that I cannot give a report of a satisfactory autopsy. The animal was 8 or 9 years old, and had only been purchased about a fortnight.

EXTRACTS FROM FOREIGN JOURNALS.

Hypertrophy of the Prostate in the Dog.

M. E. Liénaux, in the January and February Nos. of *Annal Méd. Vét.*, 1896, mentions four cases of this complaint which is common in aged dogs.

Prostatic Hypertrophy with Intermittent Hæmorrhage.

Dog nine or ten years, apparently healthy and very vigorous, had an escape of blood from the penis after micturation, and after the least exertion as jumping, barking etc., examination of the sheath, glands, urethra and bladder did not reveal any anomaly of these parts, but on rectal palpation the prostate was found to be very much enlarged, of the size of a hen's egg, and of a firm consistence. The

blood ejected was frequently pure and sometimes spermatozoa were mixed with it. Catheterization of bladder gave exit to very clear urine, which was not followed by hæmorrhage. This last symptom was due to the exertion required to expel urine through an enlarged prostate. Palliative treatment was adopted, but without leading to any improvement, and six weeks after the retention of urine was absolute. Catheterization was not accomplished and the author performed cystopexy, in consequence of which the animal died. On post-mortem examination he found the usual lesions of uræmia, and a considerable enlargement of the prostate which was of the size of two walnuts, each lobe was well separated from the other, they were of a soft consistence and of a homogenous structure—apparently a case of simple hypertrophy.

Calculous Cystitis consecutive to Hypertrophy of the Prostate.

A draught dog, aged 7 years, had for several weeks been passing blood with his urine, which was emitted with difficulty, and was soon followed by retention. On examination the presence of a calculus was discovered in the canal of the *os penis*. Urethrotomy was performed and the stone was removed without leading to an emptying of the bladder. After a fresh examination and the extraction of 10 small calculi or sediment which still obstructed the lumen of the canal, urine escaped properly, but in consequence of the wretched state of the animal he was destroyed at once.

Post-mortem. About 60 calculi were found embedded in the mucous membrane or free in the cavity of bladder. These stones, as large as a small pea, were spherical, white and small, and were composed of ammonio-magnesium phosphate. The prostate increased in size and measured 150 min. at its circumference.

Perineal Hernia and Prostatic Hypertrophy.

A large dog aged 12 years, having below and to the right of the anus a circumscribed enlargement which, although generally not very large, intermittently increased in size. Quite suddenly this tumour, soft and reducible at the commencement, rapidly increased in size, and became hard, so that at last the animal could not urinate any longer. Vesical hernia was diagnosed, then a puncture of the walls of bladder was made near the perineum which enabled the organ to be reduced. The recurrence of the accident combatted by the same means was again adopted, to be followed by cystopexy on a fresh recurrence. Animal died in consequence of hæmorrhage occurring during the operation, and on p.m. prostatic enlargement was found.

Prostatic Hypertrophy and Hydronephrosis.

This was a case of hydronephrosis, found on post-mortem examination of an old dog which died of broncho-pneumonia and prostatic hypertrophy. The anomaly was detected by the sole fact that the enlarged gland lead to an obstruction of the urine. The prostate measure 150 mm. in circumference.—(*Revue Vétérinaire*, Jan., 1897.)

(This is a very common complaint in aged dogs, and is often overlooked, frequently being treated as *constipation* by those not skilled in canine practice. It is frequently associated with other senile complaints such as "contracted" kidney, valvular disease of the heart, and enlargement of the liver. Suppurative prostitis is also seen. Sometimes the pus is evacuated into the urethral canal and discharged with the urine; at other times the gland opens into the peritoneal cavity and gives rise to *septic peritonitis* and consequently death. Finally, it may occur when the testicles are ectopic and the seat of enlargement due to chronic orchitis.)

H. G.

Royal College of Veterinary Surgeons.

OBITUARY FROM JANUARY, 1897, TO DECEMBER, 1897, INCLUSIVE.

Case, Frederick Swaffham, Norfolk,
Creswell, Edwd. Bromsgrove, Worcestershire
Pattison, H. A. Cape Town, S. Africa
Fisher, H. Whitehaven
Reid, Robert Leith
Dudgeon, David Sunderland
Roberts, Robert, Wrexham
Ware, Edwin Bridgwater
Mills, W. Sloan Newry, Co. Down
Sants, A. W. Bath
Ewale, T. J. R. Plymouth
F Thornton, James Easingwold
Stallard, Geo. R. Pontypool, Mon.
Chalmers, James Longton, Cheshire
Eglington, H. S. Sydling, Dorchester
Thomas, J. Davies Lampeter
Morris, Henry Liverpool
Garton, Edward Loughborough
Tegg, George Lower Edmonton
Brady, P. J. Sydney, N.S.W.
Marson, C. Melbourne
Stewart, John Sydney, N.S.W.
Farrow, George Durham
F Dun, Finlay Edinburgh
Mason, Joseph Southwark
Leather, Thomas Liverpool
F Perrins, H. R. Worcester
Jebson, James Pocklington, Yorks.
Tilsley, Thomas Welshpool
O'Riordan, John Limerick
Pike, Peter Manchester
Sandeman, George Liverpool
Spinks, R. D. Brighton
Row, John E. Burton-on-Trent
Dyer, Richard Henry Limerick
Lawler, Peter A. Westland Row, Dublin

The total number of new members for the year—to date is 101.

A. W. Hill.

Large Imports of Foreign Meat.

The arrivals of cattle, sheep, and fresh beef at Liverpool during the past week from various American and Canadian ports were the largest for some time past, there being 15 steamers with shipments. The totals were 6731 cattle, 5085 sheep, and 24,730 quarters of beef.—*North British Agriculturist.*

VETERINARY SOCIETIES.

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

A Quarterly meeting was held on the 17th of December in the County Hotel, Newcastle. Members present: Messrs. G Elphick, President; J. Gofton, G. R.Dudgeon, J. W. T. Moore, H. Hunter, A. Hunter, Wm. Hunter, A. Chivas, G. W. M. Mitchell, V. Mayor, J. K. Grainger, and W. C. Croudace.

Moved and seconded by Mr. W. Hunter and Mr. Gofton, that the minutes be taken as read.

Mr. W. HUNTER moved that a letter of condolence be sent to the late Mr. Dudgeon's representatives

Messrs. Chivas, H. Hunter, Gofton, and G. Elphick, also spoke and deplored the loss the Society had undergone.

Mr. H. HUNTER proposed Mr. Chivas as President.

Mr. CHIVAS replied that he was sorry, but that he could not undertake the post, as he could not afford the time, and that as a compliment to Mr. Elphick for his past services he moved his re-election.

Mr. GOFTON seconded Mr. Chivas' motion.

Messrs. H. Hunter and Moore also spoke. Mr. Elphick was then re-elected. The other officers were also re-elected.

Letters of apology were received from Professors Williams, and McFadyean, Wm. Hunting, H. Thompson.

Mr. ELPHICK then read Mr. Hunting's paper (Mr. Hunting unavoidably prevented from being present) and the following gentlemen took part in the discussion: Messrs. H. Hunter, Dudgeon, Gofton, and Moore.

The members were afterwards entertained to tea by the President.

ALEX. J. DALGLEISH, *Hon. Sec.*

SOME LIABILITIES OF VETERINARY PRACTITIONERS,

By WM. HUNTING, F.R.C.V.S.

Gentlemen. This subject ought perhaps to have been introduced to your notice by a lawyer, but it occurred to me as one which might be discussed by a Veterinary Society with benefit. It may be said that careful practitioners who always do the right thing need fear no liability. That is only partly true, for many a defendant has been careful and done no wrong. You cannot prevent men taking action against you, and even when you come out victorious the worry is great and the expenditure of time and money not little.

The first liability we all have is to the Royal College of Veterinary Surgeons. Our corporate body possesses disciplinary powers for the correction of offences and abuses of a purely professional nature. These are all included in the Act of Parliament in the expression "conduct disgraceful to him in a professional respect." The Council has defined two offences which are set out in the Bye-laws of the College as follows—the first refers to *advertising*, the second to covering:—

113. Advertising by Veterinary Surgeons in the public press or distributing circulars, books, or cards relating to their professional attainments, or abilities, or charges, or in respect of medicines or appliances prepared or sold by them amounts to conduct disgraceful in a professional respect within the meaning of Section 6 of the Veterinary Surgeons Act, 1881.

114. If any Veterinary Surgeon shall permit his name to be used by any unqualified or unregistered person, or do or permit any other act whereby an unqualified or unregistered person may pass himself off as, or practice as, a Veterinary Surgeon, he shall be deemed guilty of conduct disgraceful in a professional respect within the meaning of Section 6 of the Veterinary Surgeons Act, 1881.

As to advertising I think we are all agreed that it should not be permitted—at any rate so far as the bye-law defines it. There is an advertisement which must be allowed, *i.e.*, the notification sent out by a new-starting practitioner. Perhaps strictly such notifications ought to be sent only to clients of his predecessor when a man purchases a practice. But when a man ventures to commence practice in a strange district without introduction he is not limited to any class, he may send his circular to every stock-owner within the district. If this be fair (and I think it is) why should the purchaser of a practice be limited to the clients his predecessor hands over?

Personally I do not see any wrong in the publication of name and address in the local papers by any practitioner commencing, but I think this might be limited to his first three months. The objectionable advertisement is one that professes to offer special advantages, that claims to sell medicines and opinions cheaper than other men, that boasts of superior attainments or abilities. Such claims and boasts can be made by anyone, and if we were to compete with one another on these lines the most audacious and least veracious would have the advantage.

In "covering" we have perhaps a worse offence than advertising. A registered V.S. who permits an unregistered man to hold a position which the Act and Charters say he should not hold is a traitor to his profession. Probably without the bye-law no members of the College would deliberately assist an unqualified man to pose as a veterinary surgeon. No member would care to enter into a partnership with an unqualified person to earn money and to protect his partner by the use of titles which he holds solely for his own personal use.

The difficulty arises more in the form of employing unqualified assistants. Of course a practitioner may take a pupil, and it would be hard if he might not employ that pupil as an assistant when the youth held a vacation between his terms at College. But suppose the young man became a chronic student his unqualified assistantship might be dangerously extended. Still worse is it when a pupil or student fails to obtain a diploma and loses his chance of ever doing so. Such a man if kept as an assistant till twenty-five becomes unfitted for other callings and is apt to imagine he can earn a living as an unqualified practitioner. In this way are manufactured unregistered quacks, and the blame is as great on the V.S. who helped to make him as on the man himself.

I think the bye-law on "covering" should be rigourously put in force, not only for the sake of our profession but for the protection of the young assistant who may be forced into the class of unregistered practitioners without his appreciating the fact until he is powerless to prevent it.

The College bye-laws relating to Advertising and Covering do not exhaust the section of the Act dealing with professional conduct. The fact that no other offences are defined is not to be taken as implying that there are no others. Every now and then we hear (very seldom I rejoice to say) of very mean actions committed by practitioner against practitioner. Some day it will be the duty of the Council of the R.C.V.S. to consider a case of this kind, and it is well to remember that dirty tricks which are not amenable to the common law may be punishable as "professionally disgraceful."

Now as to our liabilities under the common law. Here we stand in the same position as other classes of the community—our special liability being due to the peculiarity of the work we profess to understand and offer to do. We examine horses for soundness as experts, we

treat disease, prescribe medicines, perform operations; some of us shoe horses and accept animals at livery for shorter or longer periods. In every one of these acts we are liable to accusation for want of care or skill. Like all the rest of Her Majesty's subjects we are liable to unjust accusation and the risk of law with its accompanying expense. A good deal of our work is very much a matter of opinion more than fact, or a matter of degree rather than of exactness. This leads to more possibility of disagreement than in callings where weighing or measuring may be adopted to determine who is right and who wrong. We are called upon sometimes to advise on questions relating to animals not quite veterinary, and therefore, unless we are prepared to confess to ignorance of everything outside our little calling, we should be careful to understand a few medico-legal questions not quite within the requirements of a veterinary diploma.

In our own special work the law requires that we should possess reasonable skill and take reasonable care. It is in the application of this rule to individual cases that we find how differences arise, and as to be forewarned is to be forearmed, we may perhaps help each other to-day by pointing out some of these difficulties. I only propose to touch them in outline and leave you to fill in the sketch.

Negligence.

Examination for Soundness: Although it is generally the horse we are asked to examine our advice may be required on the condition of other domestic animals. If we undertake the duty we lead our client to assume we possess the necessary special skill to guide him. If I were asked to certify to the soundness of a sheep I should decline the task. I venture to think that perhaps there are practitioners who ought to decline the task of examining some other classes of animal.

There are certain tolerably well known defects in animals which no man should overlook, and there are very occassional defects which are seldom noticed but which may be very detrimental to the animal.

Are we expected to never overlook one of these? I think not. We have to show reasonable care.

Eyes. If a veterinary practitioner were to pass as sound a horse suffering either from amaurosis or from distinct cataract he would justly be liable in damages to his client. Some excuse might be made for the man who did not mention in his certificate a mere scratch on the cornea, or for him who overlooked some irregularity in detecting the very commencement of cataract, and when a number of veterinary experts differed as to the existence of a defect it is improbable that a jury would convict a practitioner of negligence for not noting what others denied the existence of.

Wind. Defects of wind differ in degree, and it is easy to meet with cases in which two equally careful and expert practitioners disagree as to whether a horse is or is not a roarer. These fine shades of unsoundness may cause trouble, but the liability for error is difficult to fix upon a practitioner if he can find other experts who agree with him Some cases of roaring are so peculiar that with an ordinary fair examination very distinct defects may be overlooked. Some horses roar in harness, that make no noise when galloped. Very rarely a horse is met with that roars one day but is apparently sound the next when submitted to an identical trial. In such cases liability cannot be sustained for negligence, but no one need be surprised at having to defend an action before his innocence is made clear. These are the cases in which a hasty, positive opinion by a veterinary surgeon may get a fellow practitioner into trouble. Because you have heard distinctly an abnormal sound it is right to tell your client so, but to add to your opinion that the practitioner who examined a day or two prior must have been negligent or unskilful is wrong. Half the actions over soundness in which negligence is charged against a veterinary surgeon are due to hasty, and often uncalled for remarks by another practitioner.

Limbs. Defects of limbs may be overlooked, and negligence is imputable when they are clear and patent. But there are many cases in which the existence or not of ringbone and spavin may be quite a matter of opinion. Some defects in feet are easily overlooked, and the question arises whether it is necessary in all cases to remove the shoes. Without removal of shoes seedy-toe may not be noticeable, and therefore I think it is always advisable to remove them. I confess I frequently do not, but I feel that I run a risk by neglecting the precaution. Once I passed a horse as sound which was discovered the first time he was shod, to have an extensive seedy-toe in a hind foot. I lost a client, but had no action to defend. I have wondered what my legal position was in that case. Certainly I do not acknowledge any negligence.

Other parts. It is wonderful how more mistakes are not made by veterinary surgeons overlooking defects in organs which may be examined but seldom are. How many of us examine the molars? Do we all make sure that every horse is free from schirrous cord? Is the heart always tested by pulse and ear? I am afraid the majority of us often trust to chance that these parts are sound.

I would here point out that no wording of a certificate will render a man free from liability, and that the omission to mention any defects which are patent renders him liable for consequences arising from such defect. We are not liable for the correctness of our opinion, but we must give our client all the facts so that he may use his judgment whether or not he will act upon the opinion given.

It is very seldom that a client attempts to impute negligence or malpractice in our conduct of any medical case. There is such an element of doubt in nearly every medical case that only very strong evidence backed by a post-mortem examination would sustain an action.

In surgical cases it is different, and liability may be shown distinctly.

A practitioner has no right to undertake an operation unless he has sufficient skill to perform it. There are some operations so impossible that it would be wrong to undertake them. There are some so simple that only negligence could be imputed to the man who bungled them.

Tetanus ending fatally after an operation is no evidence of negligence, but it is a case that has caused great trouble to a practitioner.

Post-mortem examinations, so far as I know, have never led to any claim for negligence against a veterinary surgeon, but one can imagine a case in which they might. Suppose you are employed to find out the cause of death in a horse which is said to have been accidentally killed, but in which there is suspicion of foul play. Suppose you overlooked a punctured wound, or a fracture of the skull, and so prevented your client from successfully proving damage—would not that be negligence?

Shoeing Forges. The owner of a shoeing forge has some special liabilities. Horses may be injured in the operation of shoeing or by other horses, or by violence and struggling due to fright or vice. A master is also liable for the acts of his workmen unless the workman is guilty of malicious conduct, and then a nice point of law arises. If a farrier strike a horse while he is shoeing it and injury to the animal results, the master is liable. But suppose a farrier takes a gun and deliberately shoots a horse in his master's shop the liability is removed from the shoulders of the master.

Actions against the owners of farriers' shops have been successful for injury caused by picked-up nails in the shop. It was held by the court that sufficient care had not been taken in sweeping up nails and stubs.

Action would also lie for negligence in tying up a horse or in putting a kicker in such a place that he could injure other horses.

A farrier may detain a horse for payment of the set of shoes just put on, but not for any other claim he may have against the owner.

A horse sent to a forge to be shod cannot be distrained by the landlord for rent.

If you detain a horse you are liable to feed and keep the animal properly.

During all reasonable hours a farrier cannot refuse to shoe a horse. Probably the refusal in a town would never lead to any action, but it is easy to imagine circumstances in which damages might be claimed for injury done. In the olden days when long journeys on horseback were undertaken loss of a shoe might cause serious injury, and refusal to shoe by a farrier might prevent a traveller fulfilling an important engagement.

The veterinary surgeon has no lien upon a horse for any charges due for treatment or for any account owing for treatment or keep.

Sometimes it is a little difficult to be sure who is responsible for the charges incurred for keep and treatment. When a horse is accidentally injured he is generally taken to the nearest veterinary infirmary, and few practitioners decline to act. At least one case is on record where the owner has been mean enough to decline to pay for either keep or treatment after his horse's life has been saved. He pleaded that he never employed anyone to act for him and that no agent of his took the horse for treatment.

In all cases where the horse is the property of a stranger care should be taken to fully identify the person who brings the animal, and as soon as possible to have his orders verified or repeated by the owner.

A veterinary surgeon has some responsibility for his advice to owners when the Clauses of the Animals' Diseases Act apply. I know no attempt to fix liability in a court, but there are cases in which very great loss has followed errors of diagnosis or negligence to warn the owner early. How serious for instance might be the consequences of failure to diagnose and secure a rabid dog kept in a house with ladies and children. What fearful loss might follow the retention of a glandered horse in a large stud if no isolation or use of mallein were adopted.

Of course mere failure to diagnose a case of disease does not entail liability for damages, but failure to diagnose well-marked cases certainly amounts to negligence.

There is one more liability practitioners must not overlook. They are liable to be prosecuted by the Society for the Prevention of Cruelty to Animals if a learned officer of that Society should fancy that the treatment adopted by a veterinary surgeon was improper. You may be accused of Cruelty to Animals for performing an operation, or for advising an owner to work his horse If you are prosecuted for "cruelty" you may be certain that some member of the Royal College of Veterinary Surgeons will give evidence against you.

EXTRACTS AND NOTES.

GLANDERS IN GLASGOW.

Considerable anxiety exists just now among horse owners regarding the spread of glanders in Glasgow. There was a serious outbreak of the disease two or three months ago, and, according to the horse owners, matters do not seem to have mended. The feeling caused among the proprietors of horses at the laxity of the Local Authority is so strong that there is serious talk of calling an indignation meeting on the subject. It is only fair, however, to indicate the difficulties of the Local Authority, a body which in Glasgow consists of a committee of the Corporation, with Councillor William Stevenson as convener. It is urged on their behalf that they cannot interfere unless a horse betrays outward signs of being affected by the disease, and they have no power to compel an owner to have his horses tested. Before they can adequately grapple with the disease they state that two things are essential. First, it is necessary that they should have power to compel the application of the mallein test in cases where reasonable suspicion exists of the soundness of a horse; and secondly, that stables should be placed on a level with byres, cowsheds, &c. At present the mallein test can only be applied with the consent of the proprietors of the horses. As an earnest of their desire to stamp out the disease, the Local Authority are about to take steps to obtain the necessary powers. A meeting was recently held between the Glasgow Local Authority and the Local Authority of Lanarkshire, to consider the subject, and they agreed on the propriety of making application to the Board of Agriculture to institute an inquiry into the whole subject. It may afterwards be necessary to apply to Parliament for powers. But so far as their powers extend, the Local Authority claim that they are fairly successful in coping with the evil, and they are inclined to think that the fears of the owners are somewhat exaggerated. On the other hand, the owners state that their fears are only too well grounded. They have prepared statistics showing that the disease is on the increase, and they are prepared to submit the figures for the closest scrutiny of the Local Authority. This is not the place to enter into details, but it may be mentioned—from a statement prepared by the Local Authority—that in one stable, out of 106 horses treated with the mallein test, 101 were found to be diseased. It is fair to add that the owners of the horses themselves asked that the test should be applied. The horse owners point out further—while admitting that the Local Authority are handicapped—that they do not exercise fully even the powers they possess. They base this statement on a bye-law of the Local Authority, which bears—"That any horse that has been in contact with, or in the same stable, building, field, or other places with horses affected with glanders or farcy, shall not be removed from such stable, building, field, or other places except under a license granted by the inspector of the Local Authority." In face of this, the horse owners say that horses, admittedly suffering from the disease, are allowed to be wrought on the streets, to the danger of healthy animals. With the powers allowed by the bye-law quoted, the horse owners state that the inspector of the Local Authority, while he cannot compel an owner to subject a horse to scientific test, can, if he has reasonable suspicion, prevent him from working the animal. They point to a case in a town near Glasgow, where the inspector, finding one of a number of horses diseased, compelled the owner to isolate the others. The owners, however, admit that the real remedy is to be found in making the mallein test compulsory. The value of this test has been recognised by the London Road Tramway Company, who own 4000 horses. They never purchase a horse without first having the test applied. The mallein test was discovered a little over three years ago, and it is now acknowledged by experts to be as nearly perfection as may be, and has only failed in something like 1 per cent. in the cases where it has been applied. Glanders is a somewhat insidious disease. It may exist in a horse for a considerable time without manifesting itself by outward sign, and therein lurks its danger. A representative of one of the largest horse-owning firms in the city mentioned that they applied the test to a number of horses which showed no outward marks of disease. One of the animals tested seemed the freshest

and fittest of the lot. The test reacted, and the horse was slaughtered. A post-mortem examination revealed that the animal's lungs were hopelessly diseased. The test, if it fails on a first application, may be re-applied within ten days. Horse-owners—certainly the larger owners—show no unwillingness to have this test applied. Many of them indeed make the application of it a regular practice. It involves something of a hardship to the smaller owners, to whom it must obviously be a serious matter that they are unable to work their stock. But there is now a tolerably fair scheme of compensation. If when a horse is slaughtered examination shows the existence of glanders, the owner gets a fourth of the value of the animal as before it is slaughtered. If the post-mortem examination reveals no disease, the owner gets full value for the animal. The mallein test, however, is so reliable that the chances of failure are infinitesimal. Out of 4000 horses operated upon—the property of the London Road Tramway Company—the test failed in only one case. The horse-owners have already had a conference with the Local Authority. The owners are convinced that glanders can be stamped out; and they are generally agreeable, when a case of glanders occurs in a stable, to have the other animals malleined, and if the test reacts, to have them slaughtered. On the whole, there seems to be a clamant need for extension of the powers of the Local Authority, and this can best be done by making the mallein test compulsory. It is to be hoped that the steps now being taken by the Local Authorities of the city and the county may lead to a more satisfactory arrangement than now prevails.—*The Glasgow Herald.*

THE RINDERPEST IN SOUTH AFRICA.

Memorandum adopted at the Conference held in Cape Town on the 14th and 15th October, 1897, between the Colonial Veterinary Surgeon, the Director of the Bacteriological Institute, and the Medical Officer in charge of the Koch Laboratory, Kimberley.

This conference, while acknowledging the services which Dr. Koch has rendered to South Africa by his discovery of the value of gall obtained from sick animals as a protection against rinderpest, and of the hundreds of thousands of cattle which have been temporarily preserved by the application of that method before any other was discovered, now recommend:

(*a*) That inoculation with bile either pure (Dr. Koch's) or glycerinated (Dr. Edington's) should not be adopted in any district in which it has not already been commenced, as more satisfactory and more permanent results are obtained from the use of serum, and the latter method can be more successfully applied in clean herds than in herds which have been previously inoculated with bile.

(*b*) In all cases where cattle have been inoculated with Koch's bile, it is not recommended that it be followed by an inoculation with virulent blood on the tenth day, because experience shows that unless this blood inoculation is followed by a decided reaction, which occurs very rarely, it does not appear to increase the immunity already conferred by the bile. In the case of dairy cattle, which have been inoculated with Koch's bile, and the owner does not wish to inoculate them with serum and virulent blood in order to communicate a modified form of disease to them, as such a course would cause them to cease the secretion of their milk, and, in many instances, to cast their calves also, it is recommended that such owners may, with advantage, reinoculate their milch cows with pure bile as a means of protecting them from the disease for several months, and retaining their milk at the same time.

With respect to glycerinated bile, the method has included the inoculation of one-tenth of a cubic centimetre of virulent blood on the tenth day following, and it has been recommended that a second blood inoculation should be made fourteen to seventeen days later. In many cases very satisfactory results have followed this second blood inoculation, but in some cases where the cattle entirely resisted the first blood inoculation, *e.g.*, where none in the herd sickened, the second blood inoculation has been followed by a considerable mortality. Hence this conference, while not opposing a second inoculation of blood, does not recommend its universal adoption, as it is attended with considerable risk.

With respect to serum, the members of the conference are of opinion that properly prepared serum is superior to and much more convenient for use than defibrinated blood, and they would strongly recommend the use of the former in preference to the latter when it can be obtained. But in order to meet any sudden outbreaks that may arise in districts far removed from the centres where the serum is being prepared, they recommend that some fortified salted cattle be sent to such districts to meet their wants until such time as serum can be sent to them.

Detailed Instructions Respecting the Use of Serum and Defibrinated Blood.

Serum.—The Agricultural Department provides serum of a high immunising power; it is placed in bottles, and will keep for a considerable time. Directions for use are also sent out with each consignment.

With respect to healthy herds, the use of serum alone does not confer a long immunity. It is, therefore, necessary to infect healthy animals with rinderpest, and the experiments already conducted indicate that this may be safely and satisfactorily accomplished by injecting subcutaneously virulent blood on the one side of the animal and serum on the other. This process gives the disease to the healthy animals in a modified form, and although some may require a second dose of serum most of them will recover.

The Department, however, recommend that clean herds should not be inoculated with serum until the disease has actually appeared in them, or in their immediate neighbourhood. When herds become infected, these should be injected with serum immediately. Those animals in the herd which, on examination, show a normal temperature, should be injected with virulent blood, or be kept in close, continuous associations with the infected animals by kraaling them together every night.

The use of serum in herds previously inoculated with bile.—It is useless to attempt to infect whole herds which have been previously inoculated with bile, because it does not seem possible to give all such inoculated animals the disease simultaneously. Most of the cattle will become sick after the injection of virulent blood, but many may remain unaffected, as the immunity conferred by the bile is still effective and protects them, and they will in consequence not become salted. In these herds the most satisfactory course to pursue is for the owner to obtain a sufficient supply of serum and inject the cattle with it as soon as they are observed to be sick, or the thermometer indicates a rise of temperature. Cattle already sick require a larger dose of serum than those that are healthy, and in severe cases a second dose even may be necessary.

Defibrinated Blood.

Directions for its preparation and use.

In case a farmer is in possession of salted cattle, and is so situated that he cannot obtain the highly immunising serum, he can utilise the blood of such animals.

The salted animal may be either one which has re-

covered from a natural attack of the disease, or from an attack following inoculation. In any case the animal selected should be in good condition, free from disease, and must have recovered from rinderpest at least six weeks.

It is better, where possible, to prepare or fortify these salted animals by injections of virulent blood, commencing with 10 c.c., then 20, 50, and lastly 100 c.c., at intervals of ten days.

Obtain a clean iron pail, enamelled if possible, or a tin pitcher with a closely fitting lid, wash it thoroughly, then fill with water, and boil the water in it for a quarter of an hour.

Make a whisk or brush of iron by unravelling a length of iron rope, boil this in the bucket or pail.

Cast the salted animal, cut the air of the neck from over the jugular vein, wash the part thoroughly, and then rub it with a disinfectant, such as a 5 per cent. solution of carbolic acid, in water or sheep dip and water.

Empty the water out of the bucket or pitcher. Bleed the animal into it, and at the same time whip the blood with the iron brush until it is covered with the white fibrin of the blood. This will be accomplished in about ten minutes or quarter of an hour.

Strain this defibrinated blood through a well-boiled piece of muslin, or butter cloth.

Inject this defibrinated blood in doses of 100 or 200 c.c. into the *sick* animals, under the skin only—not into the muscles—either behind the shoulder or into the dewlap.

D. Hutcheon.
Alexander Edington.
Wilhelm Kolle.
George Turner.

Department of Agriculture,
Cape Town, 15th October, 1897.

THE PART PLAYED BY INSECTS IN THE SPREAD OF PLAGUE, AND ON THE RECEPTIVITY OF DIFFERENT ANIMALS TO PLAGUE INFECTION.

An experimental study by Dr. Geo. H. F. Nuttall, Berlin.

(Translated from the "Centralblatt fur Bakteriologie und Parasiten Kunde.")

In 1894 Yersin stated, in his report on bubonic plague, "that flies contract the disease and die of it, and that they may serve as agents of transmission. I remarked many dead flies in the laboratory in which I made my animal autopsies. I caught one of these flies and having removed its wings, head, and feet, I steeped it in bouillon and inoculated it to a guinea pig. The inoculation liquid contained a great number of bacilli, precisely similar to the bacillus of plague, and the guinea pig died in 48 hours with specific plague lesions." (See Annals of Pasteur Institute, Vol. VIII, p. 667.)

The only other mention of flies in connection with plague, to my knowledge, was made by Haeser in 1882 He states that the city of Bengasi, in Tripoli, was attacked by plague in 1858-59, and lost two-thirds of its inhabitants, who numbered 10,000. Bengasi was a very dirty town, and on account of the number of flies there it was called by the Turks the "Kingdom of Flies."

Yersin's statement that the flies died of plague did not seem to me proven Dead flies are often observed, especially in hot weather and in closed rooms. They probably die from want of water. It is also possible that the flies in Yersin's laboratory died of corrosive sublimate fumes. That the dead flies (observe that he reports examining one only) contained plague bacilli is not proof that they died of plague.

To decide this question I instituted the following experiments: The culture which I used came from a traveller from Bombay, who died of plague in London, and it killed mice in thirty-six to forty-eight hours. I received it from Dr. W. Kolle, who had it from Dr. Allan Macfadyen.

Infection Experiments with Plague Bacillus in Flies.

The flies (*Musca domestica*) were caught usually shortly before the experiment began and inclosed in a lamp cylinder closed with corks. The cylinders were about 30 centimetres in length and had a diameter of 5 centimetres. In the cylinder was placed a folded fly paper, on which it is observed flies light preferably. Both corks had an incision made for ventilation. These incisions were covered with fine wire netting. Into each cork was also fitted a tube for administering food. Only a small number of flies were placed in the apparatus. A drop of fluid food was placed on a folded piece of filter paper which was then passed through the tube. The cylinder was placed in a wire basket set in a bowl of corrosive sublimate solution to prevent the penetration of very small organisms through the wire-netting cover. The whole apparatus was then covered with a well ventilated bell glass.

The living flies were withdrawn by shaking through a glass tube inserted into the cork in the mouth of the cylinder, and passing into another similar cylinder or reagent glass. They were killed by a slight blow on the head by a glass rod passed into the second cylinder. Their contents were removed and inoculated to a mouse.

The experiments show that flies die when they are fed on plague material. Unfortunately a number of control flies died also. The average temperature of Hongkong during July, the hottest month, is about 31°C., and it would seem that Yersin must have made his observations on flies at that time. I therefore made that temperature the limit in my experiments.

Another fact of especial practical significance is the following:

Flies may live many days after they have taken infected food, and hence it can not be denied that they may play a part in the spread of plague, if they fall into food supplies or void their excreta into them. Many experiments that show living infected flies may, after remaining twenty-four or forty-eight hours, and even longer in a clean apparatus, with no infected food, be full of virulent plague bacilli.

From a practical standpoint, and on the basis of these experiments, the utmost precautions should be taken against flies. Plague bodies should be covered immediately with cloths soaked in disinfectants. All excreta of the body should be disinfected. Food supplies should be kept covered. Ogata says that in localities infested with flies, fleas, and mosquitoes the plague patient should be kept under mosquito nets.

That other insects than flies may play a part in the spread of plague is stated from different quarters. Hankin, in Bombay found that mice and rats when inoculated with excreta of ants, which had fed on rats dead of plague, died in twelve hours. Hankin believes that ants spread the plague in Bombay. Ogata found that plague bacilli were on rats sick of plague. He thought they might inoculate with plague by their bite. This has not been experimentally shown, and the same is true of the influence of mosquitoes.

Receptivity of other Animals to Plague.

(*a*) *The spontaneous outbreak of plague among animals.*—From recent publications we should derive the idea that the death of animals from plague was of

recent observation. That it has, on the contrary, been long known will be shown by a glance at the literature on the subject.

Boccacio states in the Decameron that he himself had seen two hogs die of plague in the streets of Florence (1348). Dogs, cats, and chickens died at other places. The bodies of animals dead from plague in Africa were observed by Haeser to be black. Birds which alighted on human plague corpses sickened and died.

Lodge says, in his treatise of the plague, London, 1603, "and when as rats and moles and other creatures (accustomed to live underground) forsake their holes and habitations, it is a token of corruption in the same."

In the present century it is reported that in 1836, at the time of the second epidemic at Pali, in India, a great mortality among the animals, but especially among the rats in the vicinity of the city, was observed. At the time of the plague epidemic at Kermaon and Gahrwal, in 1851, there were two huts in the vicinity of Dudoli in which 16 men were attacked with plague, of which number 14 died. Great numbers of rats in these huts died, while 30 head of cattle that occupied the huts were not affected. Rocher states that the bodies of Chinese, who died of the plague in the province of Junnan, were not buried, but exposed to the sun, which afforded the flies an excellent scope for their influence. The rats were first attacked. They left their holes in crowds, tumbled about and died. Buffalo and dogs were also affected. These facts are confirmed by many other observers.

During the last epidemic the death of animals from plague was frequently observed. Kitasato and Yersin examined dead rats and mice and isolated the plague bacillus. Lawson states that rats and mice did not die spontaneously of plague during the epidemic at Hong Kong. Janson, in his article, "Black death among animals," states that official reports from Canton show that Chinese who had eaten hog flesh infected with plague were attacked with plague. It has been frequently observed that first rats and mice, and then hogs and cattle begin to die before the disease attacks men. Ogata, in his report on plague in Formosa, says that plague was called there "Rat pest." He found plague bacillus in 6 rats found in the streets of Taihokus.

(*b*) *Plague artificially induced in animals.*—The following is a short statement of my experiments in inoculation, together with those of other authors :

Rats : Died two to four days after inoculation. (Kitasato, Yersin, and others.)

White rats : Died after fifty-four hours (2 animals). (Nuttall.)

White mice : Were less receptive than house mice and rats. (Wilm). They behave very differently. Of 2 inoculated under the same circumstances, one died after forty hours, another after five and one-half days. (Nuttall.)

House mice : Die one to three days after inoculation. (Kitasato and Yersin.)

Field mice : Of two animals which were inoculated with a not perfectly virulent culture, 1 died of plague in six days ; the other continued to live.

Guinea pigs : Died after two to five days. (Yersin and Kitasato.) Young animals died still sooner.

Rabbits : Died after two to five days (Kitasato) ; four to seven days (Wilm) ; two to six days (Ogata.)

Monkeys : A monkey died five days after feeding with pure culture in sugar cane. Two other animals died spontaneously in the laboratory. (Wilm.)

Cats : Wilm observed 2 cats fed with bubo material. They were ill seven days, but recovered. Ogata saw cats (number not given) die after inoculation.

Chickens died usually three to four days after inoculation. (Wilm.) Are refractory according to Ogata.

Sparrows : One died after seventy-two hours. (Nuttall.)

Adders : (*Pelius borus*) : At 26° to 28° C. died of plague after forty-three hours. A control animal remained alive at this temperature, and was quite alert after two weeks. (Nuttall.)

Lizards (*Lacerta agilis*) : At 21° to 26° C. one died of plague after thirty-six hours. Another remained alive for a week.

Swine : Lawson inoculated and fed swine with plague organs from man. They had fever, but recovered. (*Lancet*, July 27, 1895). Wilm saw a hog die twenty-two days after feeding with human plague spleen. Ogata stated that swine died some days after inoculation.

Horses : I have never known a horse to die after inoculation, but the following shows that the horse may be receptive to plague : An entire gelatine culture, which had killed house mice in two days, was intravenously injected. A violent fever ensued, which lasted one week. Cure followed. (Yersin, Calmette, and Borrel, Annals of Pasteur Institute, Vol. IX, 1895, p. 594). A quarter culture, subcutaneously injected, induced violent fever for forty-eight to sixty hours, with large tumor on spot of inoculation, which developed into an abscess.

When not otherwise stated, the animals were subcutaneously inoculated. I could not keep moles alive long enough to test their immunity. They do not bear captivity. In short, it appears that during plague epidemics in various countries the death of rats, mice, swine, cats, dogs, cattle (viz., buffalo, goats, horses, and mules), snakes, chickens, and birds has been observed and reported. By bacteriological examination it has been shown that rats and mice contract plague and die. It has been shown that plague may be experimentally induced, with fatal results, by feeding or inoculating with plague matter rats, white mice, house mice, field mice, wood mice, guinea pigs, rabbits, swine, monkeys, cats, chickens, sparrows, and flies. Pigeons, hedgehogs, and frogs are immune. Lizards and snakes are receptive at high temperatures, but are otherwise immune. Experiment with dogs and cattle is negative.

Further investigation in this field should prove interesting, if we consider the results obtained by Yersin, Calmette, and Borrel. These writers find that by inoculation of the same species of plague bacillus from animal to animal a definite degree of virulence is obtained. "The microbe which kills the mouse in two days, when it is carried through the rabbit, requires, in its first transition, considerable time to cause the death of that animal. After several passages it kills the rabbit regularly in three days, but it has then lost its virulence for mice, and some passages from mouse to mouse are needed to restore it."

Berlin, July 15, 1897.

[We are indebted to Mr. Bowhill for this extract.—Ed.]

Messrs. Willows, Francis, Butler, and Ayscough Thompson.

With the new year these old established firms have joined forces, and are preparing for more extensive operations. For the present their address is High Holborn, but we understand that some of the usual vexatious restrictions as to reconstruction of premises on expiry of lease has compelled them to seek other quarters ; but inasmuch as the removal will mean additional space with more conveniently arranged premises, it is not an unmixed evil for them ; and the new premises will be as conveniently situated for most of their customers as those in Holborn. Messrs. Willows, Francis, and Butler's varied supplies must be well known to most of our readers. Messrs. Ayscough Thompson's specialities are Infusions, Fluid extracts, Liquors etc.

NUMBER OF VETERINARIANS IN THE DIFFERENT EUROPEAN COUNTRIES.

The Minister of Agriculture in Italy has published some interesting statistics in regard to this subject, from which Müller gives the following table in the *Archiv für Wissenschaftliche und praktische Thierheilkunde*, vol. xxii., No. 6 :

Countries.	Total No. of veterinarians.	One veterinarian to square kilometres.	One veterinarian to number of horses.	One veterinarian to number of cattle.
Belgium	475	60	570	2793
Bulgaria	48	2014	9038	36874
Denmark	475	81	864	3571
Germany	3516	153	1093	4993
France	3389	129	1028	3835
Greece	17	3830	–	—
Great Britain	2698	116	639	3290
Holland	437	75	623	3506
Italy	2561	112	622	1868
Luxemburg	23	112	719	3459
Norway	123	2620	1227	8153
Austria	957	312	1678	9032
Portugal	88	1058	2263	7931
Roumania	133	985	4517	18595
Russia (including Poland)	853	5037	20961	28427
Russian Poland	72	1554	—	38188
Sweden	310	1422	1598	8013
Switzerland	571	71	182	2071
Servia	45	1080	3666	18394
Spain	3432	146	599	646
Hungary	732	444	2388	6655

OBITUARY.

PETER ALFRED LAWLER, M.R.C.V.S., Dublin.
Graduated Lond., July, 1877.

Mr. P. A. Lawler died at his residence, Westland Row, on Monday, 27th December last.

CORRESPONDENCE.

"ROYAL RECOGNITION."

Dear Sir,

I agree with Mr. Hurndall that the Jubilee medal is of little or no honor to the profession. I should like to have seen a knighthood or a baronetcy conferred on one who has done more than any man living to raise the status of the profession and good to agriculturists—oftentimes a pecuniary loss to himself—and the whole country, and was a thorough, sound, practical teacher, and did more than all the profession together for the advancement of cattle pathology, whose teaching is as sound to-day as it was when he lectured at Camden Town College, viz., Professor Simonds.

B. EGGLETON.

SCHMIDT'S TREATMENT OF MILK FEVER.

SIR,

With reference to the translation of the above in the current issue, some six years ago Professor Macqueen mentioned in his lecture that the udder was probably the organ mostly involved in the production of milk fever, and he said that better success had followed those cases where the udder had been let alone as much as possible.

I adopted this point in my treatment of two cases experimentally, and as they recovered I continued, and found that in those cases where my instructions were carried out that recovery ensued, and that where milking had been surreptitiously performed a fatal result occurred, no matter what drugs were used, only the less irritant they were the quicker the recovery. I had the greatest difficulty in enforcing my injunctions as they were so revolutionary, but where their success was apparent they were invariably adopted in succeeding cases, and I can quote three cases where recovery ensued in two attacks, and one case in which the third attack was not fatal. Whether Schmidt's and Macqueen's lines of reasoning are similar or opposed I cannot say, but the result seems to be identical.

FRAS. EVELYN PLACE.

Hampstead, 3rd Jan., 1898.

ADVERTISING.

Dear Sir,

Casually taking up a book, in a house I was visiting, on the first page I found the following :—

"SPECIAL LAMBING AND CALVING CHESTS

Prices Complete, £3 3s. and £1 10s.

These chests contain every essential for the saving of life at this critical season, and can be arranged for cows only, or ewes only, or both. A copy of the *famous pamphlet on Lambing and Calving Disorders (by Mr. T. G. Hewitt, M.R.C.V.S.L.)* accompanies each chest."

Is this professional advertising ?

On the last page of the book is the following :

"ROYAL VETERINARY COLLEGE, LONDON.

With pleasure we bear our united testimony to the good conduct of Mr. Thos. Taylor, veterinary surgeon, Derby, during the period of his pupilage at this Institution. He was at all times most assiduous and attentive to his studies, and has given ample proof of his practical abilities and acquaintance with all the branches of his profession.

WM. SEWELL, Professor ; J. B. SIMONDS, Prof. of Cattle Path., etc. ; CHAS. SPOONER, Prof. of Anat. etc. ; W. J. MORTON, Prof. of Chem. and Mat. Med."

After a list of medicines follows :

"*Manufactured by*
T. TAYLOR, M.R.C.V.S.L., & Son., Derby.

N.B.—T. T. & S. having written a pamphlet on the "Diseases of Horses and Cattle, Sheep, etc.," sold at *1s.* per copy, will be happy to send a *supply* to any chemist upon receipt of their business card *gratis*.

Liberal Terms to the Trade."

These were so amusing in their wording, etc., that I send them to you for publication.—Yours faithfully,

A VETERINARY SURGEON.

[Our correspondent should forward his information to the Secretary of the R.C.V.S.—ED.]

COMMUNICATIONS, BOOKS, AND PAPERS RECEIVED :—Messrs. J. Bell, B. Eggleton, F. E. Place, J. D. Miller, T. Reilly, H. Wilkinson, G. Thatcher, J. Hammond, J. D. Pottie.

Kobert's *Practical Toxicology* by Friedburg, *Annual Administrative Report of A.V.D. in India*, *The Stirling Observer*.

We shall be obliged by early intelligence of all matters worth bringing under the notice of the profession, and thankful to any friends who may send us cuttings from local papers, containing facts of interest.